

AN ECOLOGICAL SURVEY OF THE
PROPOSED HENNESSY RIDGE RESEARCH NATURAL AREA,
SIX RIVERS NATIONAL FOREST, CALIFORNIA

by

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Report to Region 5 - PSW Research Natural Area
Committee, U.S. Forest Service.

National Forest
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ABSTRACT. The proposed Hennessy Ridge Research Natural Area is almost entirely covered with an old-growth forest dominated by Douglas fir, tanoak and canyon live oak. The modal stand structure consists of an irregular upper canopy of large old-growth Douglas fir over a lower all-sized canopy of tanoak, canyon live oak, madrone and Douglas fir. A sapling and seedling layer dominated by tanoak and canyon live oak with a few Douglas fir covers the forest floor.

AN ECOLOGICAL SURVEY OF THE PROPOSED HENNESSY RIDGE RESEARCH NATURAL AREA

The proposed Hennessy Ridge Research Natural Area is located in the Lower Trinity Ranger District of the Six Rivers National Forest. The area surveyed for this report is the area proposed by James L. Davis, Jr., Forest Supervisor of the Six Rivers National Forest in December 1984. The proposed RNA is divided into two units which lie on the east and west side of the north-south trending Hennessy Ridge, which lies between the Main Fork and South Fork of the Trinity River. The east unit includes part of Sections 29, 30, 31, and 32, T6N, R6E, HM. The west unit includes part of Sec. 31, T6N, R6E and Secs. 5 and 6, T5N, R6E, HM.

The eastern unit includes approximately 1008 acres. The northern boundary or lower elevational boundary of the east unit generally follows private property lines on Highway 299. The southwesterly boundary or the upper elevational boundary is formed by a series of recent clearcuts. The southeasterly boundary follows the length of Gray Creek, Figure 1.

The western unit includes approximately 772 acres. The western boundary of this unit in part follows private property lines and an indefinite line between Deep Gulch and Dry Gulch. The northern boundary follows an unnamed creek with the southern boundary following the first ridgeline to the south at Deep Gulch. The eastern boundary and upper elevational boundary is formed by a series of recent clearcuts and a U.S. Forest Service logging road; Figure 1.

Topographically, the two units lie on the mid and lower slopes of the west and northeast side of Hennessy Ridge. Small streams have deeply dissected these slopes into several draws or gulches with steep north and south-facing slopes. The majority of these side slopes in Icebox Creek, two forks of Pony Creek, and Gray Creek of the east unit are extremely steep and difficult to traverse, with modal slopes of 75%. The west unit is dissected into four "gulches" by small creeks, with the northwest slopes being extremely steep (modal slope of 80%) while the southwest-facing slopes are only moderately steep, being easier to traverse. The elevation of the east unit ranges from 800 feet to 3020 feet and west unit ranges from 1000 feet to 3280 feet. The landscape is typical of the Klamath-Trinity Region.

Geologically, the proposed area is similar to much of the mid-elevation Klamath Region. The forests are found on Upper Jurassic Marine sedimentary and metasedimentary rocks, consisting of slaty and phyllitic sandstones, shale, and minor conglomerates. The soils are skeletal, often deep, with at least 35% or more of the total soil volume being occupied by rock fragments. Most

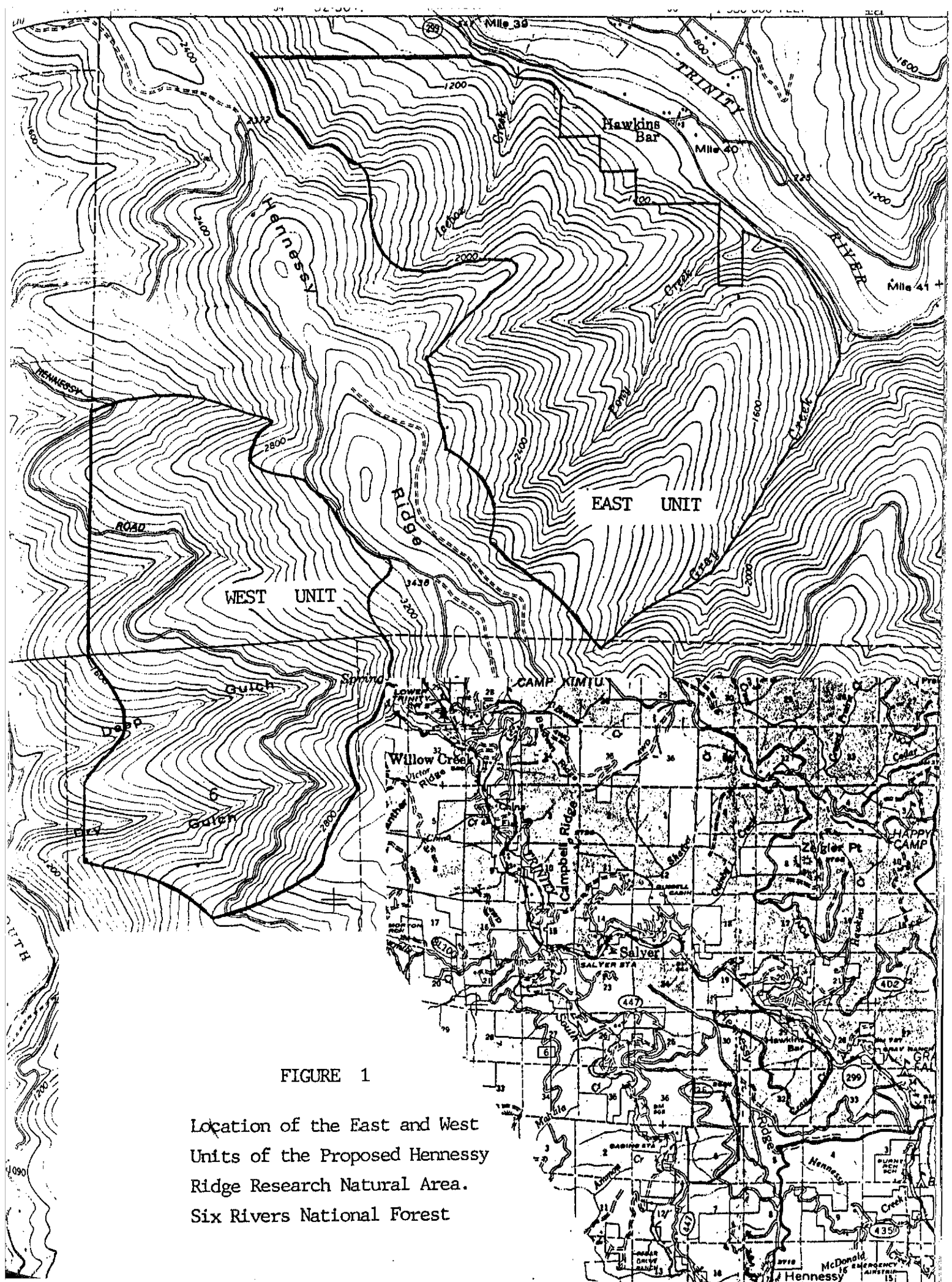


FIGURE 1

Location of the East and West
Units of the Proposed Hennessy
Ridge Research Natural Area.
Six Rivers National Forest

of the soils have a loose stony surface that tends to ravel down the steep slopes. The percent cover of loose stones on the soil surface of the 77 plots taken in this survey is indicated in Table 1.

Table I

Number of plots with loose stony soil surfaces

Estimated % stony soil surface	# of plots	% of plots
0-25%	5	7
25-50%	12	15
50-75%	17	22
75-99%	18	24
100%	25	32

The steep slopes, along with the high amount of soil surface that consists of loose rock fragments, make a large portion of the area difficult to traverse.

The eastern unit has a considerable amount of unstable slopes with numerous recent slope movements, particularly adjacent to Gray Creek, Pony Creek, and Icebox Creek. Recent slope failures have occurred almost the entire length of Gray Creek. Some of the large failures (500 feet in length) are completely devoid of any vegetation, while others have ground cover vegetation with most of the large trees uprooted. Several recent slides have occurred on both sides of Pony Creek. Recent minor slumps are located on both sides of Icebox Creek. Small slumps are also located adjacent to small streams in the "gulches" in the west unit. The streams are deeply incised with numerous recent slope failures. Other minor slope failures are located on the steeper northwest-facing slopes.

The climate is typical for the Klamath Region. The average annual precipitation is 55 inches with most of this occurring from November to March. The January mean minimum temperature is 32° F. and the July mean maximum temperature is 90° F.

The vegetation of the two units consists entirely of old-growth Douglas-fir-Hardwood forests.

Methods Used to Sample the Forest Vegetation

A preliminary reconnaissance was made in May 1987, at which time an inventory of vascular plants was initiated. From this reconnaissance, it was determined that both units were totally covered with a relatively undisturbed Mixed-Evergreen forest dominated by Douglas fir (*Pseudotsuga menziesii*), tanoak (*Lithocarpus densiflora*), Canyon live oak (*Quercus chrysolepis*), and Madrone (*Arbutus menziesii*),

with an occasional sugar pine (*Pinus lambertiana*) and ponderosa pine (*Pinus ponderosa*).

After the general reconnaissance, species composition of the canopy, understory, and ground layers were sampled using 77 releves. In representative areas, species coverage was estimated using standard sampling techniques (Mueller-Dombois and Ellenburg 1974). The extremely depauperate nature of the herbaceous ground cover vegetation prevented their use in developing vegetation types based upon indicator species.

Stand analyses

Each forest type was sampled for tree density and stand structure. All trees were measured on plots one acre in size to determine tree density and structure. Eight density plots were taken throughout the study area. One stand was systematically sampled with ten 1/5 acre plots in order to determine the relative density and variation in distribution of the larger old-growth trees.

Results

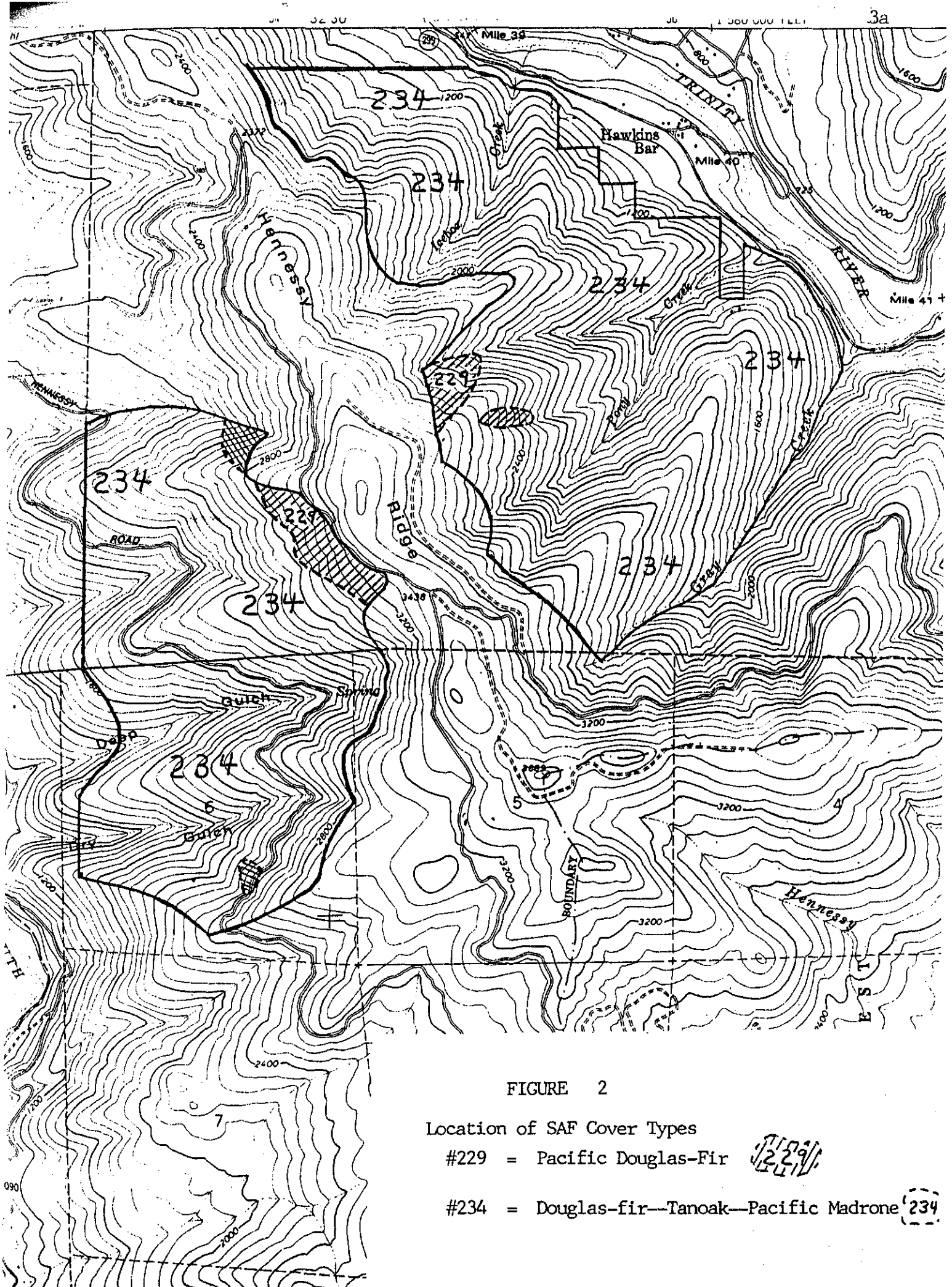
Some 70 taxa were recognized in the proposed natural area (Appendix I). These plants are typical of mid to low-elevation Klamath Region flora. No rare or endangered species were encountered.

Forest Composition

Based upon dominant canopy composition, two Society of American Foresters (SAF) cover types (Eyre 1980) are found in the RNA as follows:

SAF Cover Type	Name	Approximate Area of Type in RNA (acres)	
		East Unit	West Unit
229	Pacific Douglas fir	24	38
234	Douglas fir-Tanoak-Pacific madrone	984	734

The Pacific Douglas fir Cover Type must contain at least 80% Douglas-fir and a light mixture of other species such as tanoak and madrone. Only approximately 62 acres meet this criterion. The remaining 1718 acres has a canopy codominated by mature old growth Douglas fir in mixture with tanoak, madrone, and canyon live oak which fits the compositional definition of SAF Type 234: Douglas fir-tanoak-Pacific madrone (Eyre 1980). The approximate location of these SAF types are shown in Figure 2.



The entire forest cover of the two units is the same as the Douglas-fir hardwood forest as discussed by Sawyer et al. 1977. The forests of both units are a mixture of Douglas fir and the evergreen hardwoods: tanoak, canyon live oak, and madrone. .

The 77 releves were assembled into a series of association tables to demonstrate compositional differences, Tables II and III. Based upon the dominant reproducing hardwood tree species and characteristic shrubs, the forests of the RNA were divided into three forest associations or forest vegetation habitat types: Douglas fir-canyon live oak association, Douglas fir-tanoak-poison oak association, and Douglas fir-tanoak-Oregon grape association. These forest plant associations have essentially the same characteristics as the plant associations of the Siskiyou Mountain Province (Atzet and Wheeler, 1984).

Hennessey Ridge Association

Douglas fir-canyon live oak =
Douglas fir-tanoak-poison oak =
Douglas fir-tanoak-Oregon grape =

Siskiyou Mountain Association

Tanoak-canyon live oak
Tanoak-poison oak-hairy honeysuckle
Tanoak-dwarf Oregon grape

The location and approximate area covered by each association is shown in Figures 3 and 4. The approximate acreage of each association is listed in Table IV.

Table IV

Approximate acreage of forest associations in the proposed Hennessey Ridge Natural Area

Association	Acres	
	East Unit	West Unit
Douglas fir-canyon live oak	116	405
Douglas fir-tanoak-poison oak	774	367
Douglas fir-tanoak-Oregon grape	118	-

Douglas fir-Canyon live oak Association

The Douglas fir-canyon live oak association in the RNA is characterized by a two-storied canopy with old-growth Douglas fir forming a broken upper canopy up to 200 feet high while the evergreen hardwoods form a lower continuous canopy up to 120 feet high.

Forest stands in this association are found on the warmer, drier sites in the RNA—low elevation, south aspects, and steep rocky slopes. Atzet and Wheeler, 1984, indicate that the equivalent association in the Siskiyou Mountains

Table II

Presence (P%) and modal cover/abundance (C/A) for all sampled trees and shrubs. Cover abundance scale: 1 = one individual, 2 = sparse, 3 = common 10%, 4 = 10-25%, 5 = 25-50%, 6 = 50-75%, 7 = 75%.

Association	Douglas fir-tanoak-Oregon grape		Douglas fir-tan oak-poison oak		Douglas fir-canyon live oak	
# of releves	8		38		31	
Trees, upper canopy	P%	C/A	P%	C/A	P%	C/A
<i>Pinus lambertiana</i>	25	3	23	3	10	4
<i>Pinus ponderosa</i>	-	-	-	-	13	3
<i>Pseudotsuga menziesii</i>	100	5	95	4	97	4
Trees, middle canopy						
<i>Pinus lambertiana</i>	25	2	18	2	13	3
<i>Pinus ponderosa</i>	-	-	-	-	3	3
<i>Pseudotsuga menziesii</i>	100	3	81	3	97	3
<i>Acer macrophyllum</i>	-	-	9	2	-	-
<i>Arbutus menziesii</i>	75	3	100	4	100	4
<i>Lithocarpus densiflora</i>	100	6	100	6	70	4
<i>Quercus chrysolepis</i>	25	2	71	3	97	6
<i>Quercus kelloggii</i>	-	-	9	2	29	3
Saplings						
<i>Pinus lambertiana</i>	12	2	24	2	3	2
<i>Pseudotsuga menziesii</i>	62	2	95	3	76	3
<i>Arbutus menziesii</i>	12	2	2	2	3	3
<i>Lithocarpus densiflora</i>	87	5	97	4	76	2
<i>Quercus chrysolepis</i>	25	3	43	3	100	3
Seedlings						
<i>Pinus lambertiana</i>	-	-	29	2	13	2
<i>Pseudotsuga menziesii</i>	37	2	71	2	65	2
<i>Lithocarpus densiflora</i>	100	3	97	4	71	2
<i>Quercus chrysolepis</i>	12	2	62	2	100	3
Shrubs						
<i>Berberis nervosa</i>	100	3	-	-	-	-
<i>Corylus cornuta</i>	-	-	8	3	3	1
<i>Rhus diversiloba</i>	-	-	73	3	53	2

Table III

Presence (P%) and modal cover/abundance (C/A) for all sampled herbs. Cover abundance scale: 1 = one individual, 2 = sparse, 3 = common 10%, 4 = 10-25%, 5 = 25-50%, 6 = 50-75%, 7 = 75%.

Association	Douglas fir-Tan oak-Oregon grape		Douglas fir-Tan oak- Poison oak		Douglas fir- Canyon live oak	
# of releves	8		38		31	
	P%	C/A	P%	C/A	P%	C/A
<i>Achlys triphylla</i>	-	-	14	2	-	-
<i>Adenocaulon bicolor</i>	12	3	5	2	-	-
<i>Asarum caudatum</i>	12	2	-	-	-	-
<i>Bromus tectorum</i>	-	-	5	2	60	2
<i>Chimaphila menziesii</i>	63	2	52	2	33	2
<i>Dentaria californica</i>	-	-	-	-	13	2
<i>Fescue californica</i>	12	2	5	2	-	-
<i>Galium bolanderi</i>	-	-	5	2	23	2
<i>Goodyera oblongifolia</i>	-	-	5	2	-	-
<i>Hieracium albiflorum</i>	37	2	-	-	10	2
<i>Iris tenuissima</i>	12	2	38	2	26	2
<i>Lonicera involucrata</i>	-	-	38	2	53	2
<i>Mitella trifida</i>	1	2	-	-	-	-
<i>Monta perfoliata</i>	1	2	-	-	-	-
<i>Oxalis oregana</i>	25	2	-	-	-	-
<i>Pedicularis densiflora</i>	-	-	5	2	23	2
<i>Phlox adsurgens</i>	25	2	5	2	16	2
<i>Polystichum imbricans</i>	63	2	24	2	-	-
<i>Pteridium aquilinum</i>	12	2	29	2	10	2
<i>Pterospora andromedea</i>	-	-	5	1	7	2
<i>Pyrola pieta</i>	75	2	29	2	13	1
<i>Smilacina racemosa</i>	-	-	5	2	-	-
<i>Trientalis latifolia</i>	-	-	10	2	-	-
<i>Vancouveria planipetala</i>	50	2	48	2	-	-
<i>Viola ocellata</i>	-	-	14	2	26	2
<i>Whipplea modesta</i>	50	3	62	3	67	3

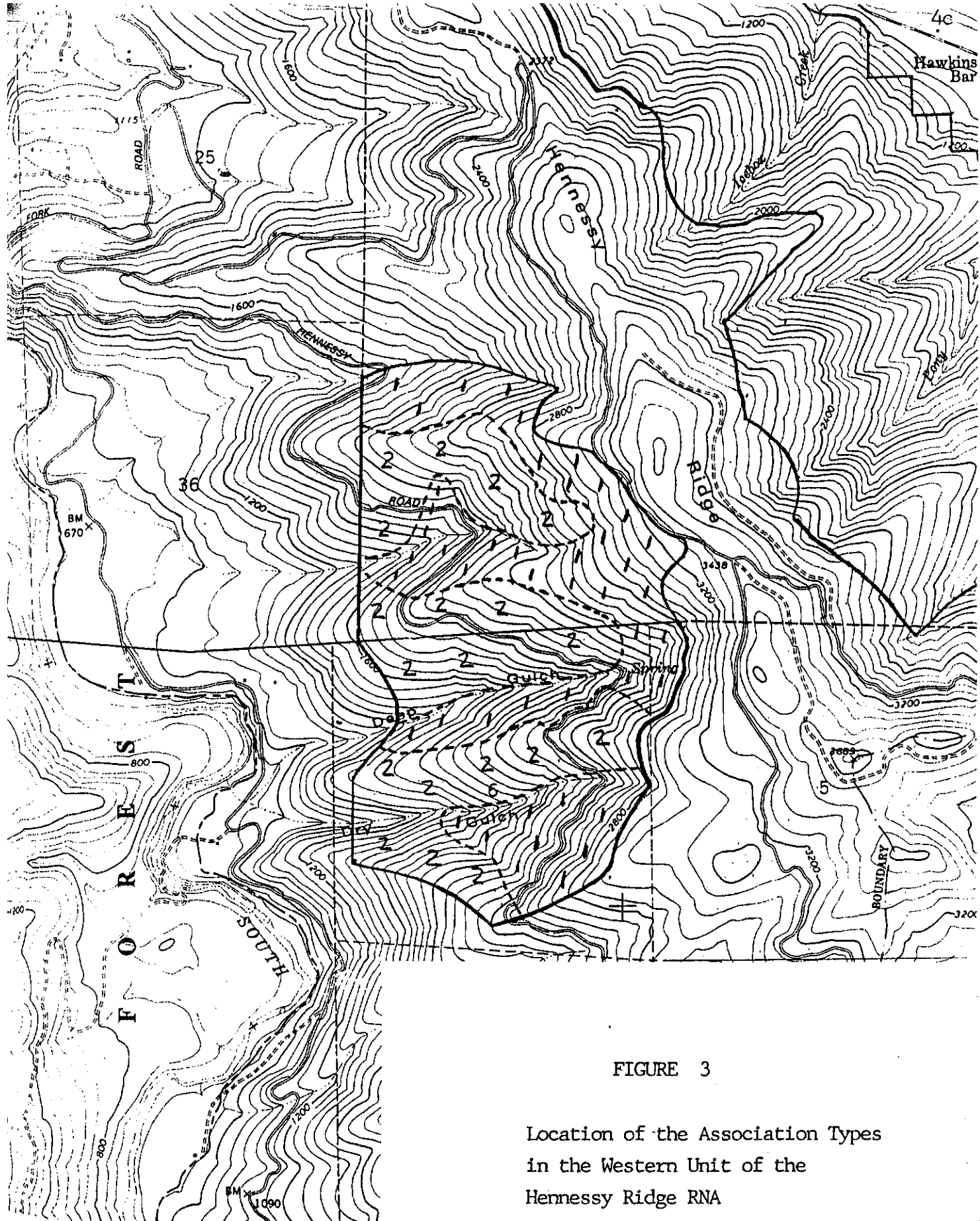


FIGURE 3

Location of the Association Types
in the Western Unit of the
HerNESSY Ridge RNA

Douglas fir - Tanoak - Poison oak Type (1)

Douglas fir - Canyon live oak Type (2)

HENNESSY PEAK QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 WILLOW CREEK 15' QUADRANGLE

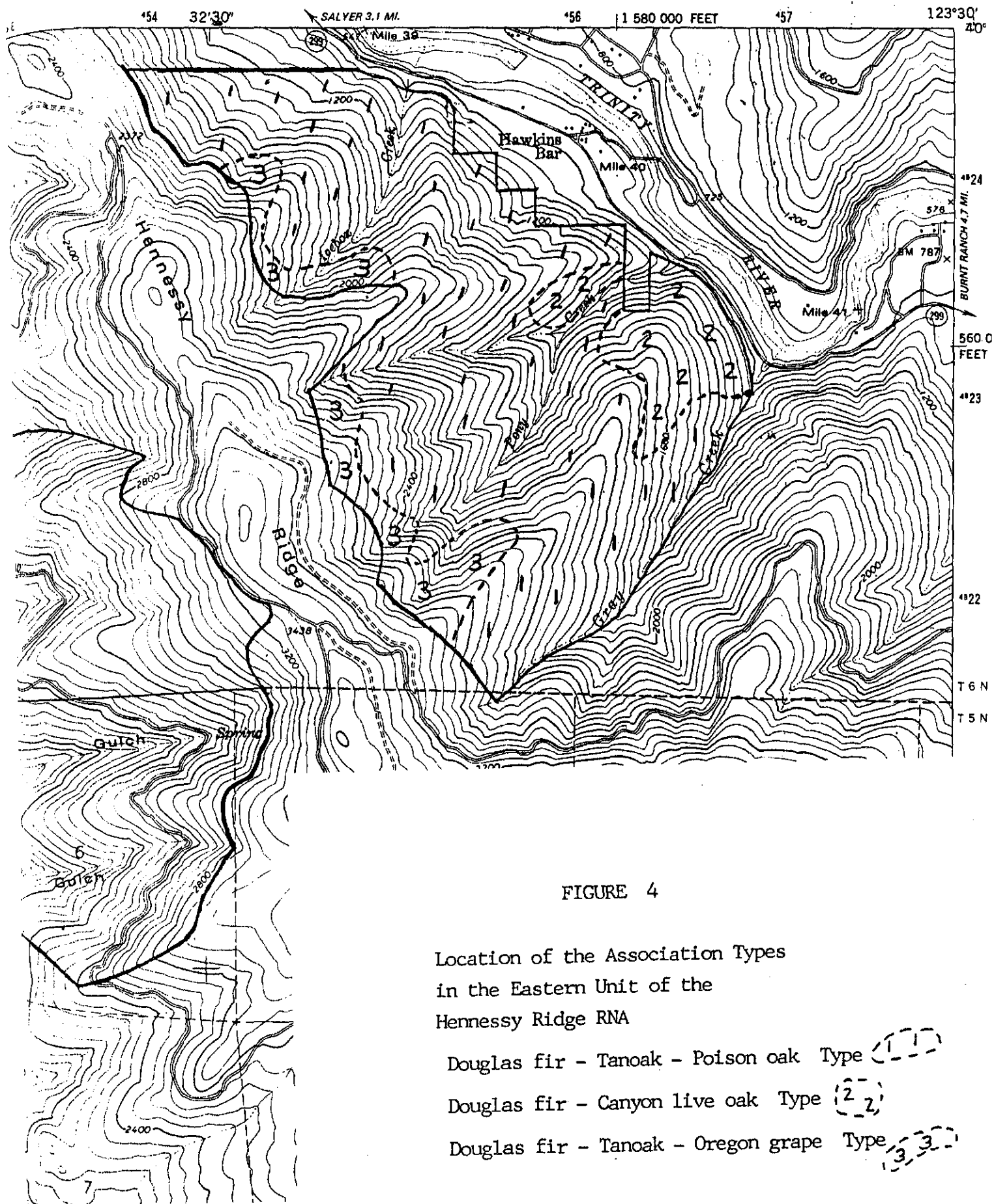


FIGURE 4

Location of the Association Types
in the Eastern Unit of the
Hennessy Ridge RNA

- Douglas fir - Tanoak - Poison oak Type (1, 1)
- Douglas fir - Canyon live oak Type (2, 2)
- Douglas fir - Tanoak - Oregon grape Type (3, 3)

"is one of the four hot-dry tan oak associations occurring on the steepest slopes with high surface rock cover."

Throughout these Douglas fir-canyon live oak forests, the stands are dominated by large-sized Douglas fir with an occasional sugar pine or ponderosa pine, which lie over a lower canopy usually dominated by hardwoods with a few pole-sized Douglas fir and occasional sugar or ponderosa pine. In this association, canyon live oak is the dominant species in the lower canopy, especially at the seedling level. Canyon live oak, tan oak, Douglas fir, and sugar pine are all-sized and all-aged in most of the stands. The species composition varies throughout the area covered by this association. In some stands, canyon live oak is almost the sole dominant hardwood; in other stands there is a more even mixture of tan oak and canyon live oak; or in a few stands, madrone is dominant in upper strata of the lower canopy while canyon live oak is dominant in the lower strata. Examples of these different stands are given in Table V. The herbaceous ground cover is very low and in some stands almost non-existent.

Table V

Two different stand structures in the Douglas fir-Canyon live oak Association

Number of trees per acre

Stand 1

Size class	(DBH inches)	Douglas fir	Canyon live oak	Madrone	Tan oak	Black oak	Ponderosa pine
Upper canopy	43-70	9	-	-	-	-	1
Mid-canopy	36 +	-	2	1	-	2	-
Mid-canopy	26-35	1	4	2	1	-	1
Mid-canopy	16-25	9	6	1	1	-	1
Mid-canopy	7-15	19	21	4	16	-	-
Saplings	0-6	140	58	5	38	-	-
Seedlings	< 4.5' tall	72	348	-	29	-	-

Stand 2

		Douglas fir	Canyon live oak	Madrone	Tan oak
Upper canopy	20-60	7	-	-	-
Mid-canopy	36 +	-	1	-	-
Mid-canopy	26-35	-	3	1	-
Mid-canopy	16-25	-	18	7	-
Mid-canopy	7-15	12	87	5	-
Saplings	0-6	31	103	-	-
Seedlings	< 4.5' tall	54	134	-	52

Douglas fir-Tan oak-Poison oak Association

This association is the most common type of forest in the Hennessy Ridge RNA. The forest stands are found on sites which are less dry than the Douglas fir-canyon live oak type—mid-elevations and north-facing slopes. This type is also located on steep slopes with high surface rock cover.

The modal stand in this type has an upper irregular, open canopy of old-growth Douglas fir with occasional old-growth sugar pine, which lies over a solid canopy of mixed evergreen hardwoods with a few all-sized Douglas fir and sugar pine. The mid-canopy is dominated by tan oak with varied amounts of madrone and canyon live oak. The tan oaks are all-sized and all-aged ranging from 70" in DBH to shrubby seedlings. An example of this modal stand is given in Table VI.

Table VI
Modal stand of the Douglas fir-Tan oak-Poison oak Association

Size class	(DBH inches)	Number of trees per acre				
		Douglas-fir	Sugar pine	Tan oak	Madrone	Canyon live oak
Upper canopy	40-87	8	2	-	-	-
Mid-canopy	36+	-	-	3	2	1
Mid-canopy	26-35	1	1	9	3	3
Mid-canopy	16-25	3	1	17	2	4
Mid-canopy	7-15	6	1	34	1	21
Saplings	0-6	13	2	38	-	29
Seedlings	< 4.5' tall	29	7	207	-	23

Most of the stands are similar to this all-aged, all-sized modal stand. However, the stand structure and species composition vary throughout the area covered by this association. Some variations are:

1. Pole-size stand of Douglas fir and tan oak, 22"-6" DBH, $\frac{1}{2}$ acre.
2. Three acre size stand of large tan oak and madrone, 40"-16" DBH, with an understory of sapling-size Douglas fir.
3. Gaps caused by uprooted large tan oak, gaps filled with Douglas fir and sugar pine saplings.
4. Five acre size stand with a 70% canopy cover of large, old-growth Douglas fir over 20' tall saplings of tan oak.
5. Small stands of Douglas fir 24"-36" DBH with low tan oak shrub understory.
6. One acre size stand dominated by large old-growth ponderosa pine over a lower all-sized stand of tan oak and madrone.

The understory of the modal stand and the various stand variations are very sparse, with usually less than 1% of the forest floor covered with shrubs or herbaceous vegetation other than tan oak or canyon live oak shrubby seedlings. The most common shrub is poison oak and the most common herb is Whipplea modesta.

Douglas fir-Tanoak-Oregon grape Association

This association type occupies 118 acres in the east unit of Hennessy Ridge RNA. The stands in this type are found on the least dry sites—the highest elevations in the RNA on north and northeast-facing slopes. The modal stand in this type is a stand with an upper old-growth Douglas fir canopy over a mid-canopy of all-aged tan oak with a few Douglas fir. The upper Douglas fir canopy is usually denser than the upper canopy of the modal stand in the Douglas fir-tan oak-poison oak association. An example of a stand in this association is given in Table VII.

Table VII

Example of a stand in the Douglas fir-Tan oak-Oregon grape Association

Number of trees per acre				
Size class	(DBH inches)	Douglas fir	Tan oak	Madrone
Upper canopy		15	—	—
Mid-canopy	36+	—	—	—
Mid-canopy	26-35	2	—	—
Mid-canopy	16-25	3	2	1
Mid-canopy	7-15	3	8	1
Saplings	0-6	7	232	—
Seedlings	< 4.5' tall	3	536	—

The understory in these stands is almost non-existent, with only a very few Oregon grape shrubs and clumps of sword fern occurring on the forest floor. Chimaphila menziesii, Vancouveria planipetala, and Whipplea modesta are the most common herbs with a cover of less than 2%.

Variation in Stand Structure

A grid system of ten 1/5 acre plots spaced at 300' intervals was used to sample the variation in stand structure. A modal stand on the flattest area in the middle of the west unit was sampled using this grid system. The summarized results are given in Table VIII.

Table VIII

Stand Structure Summary

Size		Density (stems/acre)	Standard Error of the Mean
Douglas fir			
Seedlings	< 4.5' tall	173	(86.32)
Saplings	0-6" DBH	139	(135.26)
Trees	6-35" DBH	57	(47.92)
Trees	> 35" DBH	7	(7.89)
Hardwoods			
Seedlings	< 4.5' tall	2577	(644.31)
Saplings	0-6" DBH	431	(279.47)
Trees	6-35" DBH	302	(142.58)
Trees	> 35" DBH	6	(2.96)

The high standard error of the means indicates the high degree of irregularity in the stand structure, which results from the clumpiness of the stand structure. This probably indicates that both the hardwoods and Douglas fir regenerated in gaps in these climax Douglas fir-hardwood stands.

Successional Status

Most of the forest stands in the RNA are at or near climax. The stands are all-aged and have all sizes of the dominant tree species—Douglas fir, tan oak, canyon live oak, and a small but consistent amount of sugar pine.

Ages of large conifers were obtained from cut stumps in Douglas fir-canyon live oak immediately adjacent to the west unit in Sec. 36. This was a uniform selection cut on private land that was completed in May 1987. The ages and sizes of the cut stumps are as follows:

Species	Diameter of Stump in Inches	Number of Annual Rings	
Douglas fir	23	86	} Clump of trees within 30' of each other
Ponderosa pine	32	85	
Ponderosa pine	30	84	
Douglas fir	46	140	} Trees were 10' apart
Douglas fir	40	143	
Douglas fir	51	216	} Trees were 22' apart
Douglas fir	62	214	
Douglas fir	54	277	} Trees were 12' apart
Douglas fir	55	272	
Douglas fir	28	107	} Clump of trees within 42' of each other
Douglas fir	32	113	
Douglas fir	28	107	
Douglas fir	39	106	

All the above trees were located in a stand of approximately 2 acres in size. All stumps had burn scars except the 84-86 year old stumps. This stand also had large tan oak and canyon live oak trees up to 60" DBH, all with burn scars. The ages and distribution of trees in this stand would indicate that the conifers regenerate in gaps that are created by fallen trees or minor ground fires.

Based upon this age distribution, irregularity of the stand structure throughout the RNA, light fire scars on most large conifers and hardwood trees throughout the RNA and the large number of existing gaps with successful regeneration, it is concluded that the successful regeneration of the conifers is in gaps.

The RNA also includes several stands, one to ten acres in size, that now are pole-size conifers or hardwoods with a few large old-growth trees. These stands were apparently formed by fires that removed most of the overstory.

Recent Disturbances

Very few recent disturbances to the forest vegetation were observed in the proposed RNA. The following disturbances were observed in the area.

1. A two year old, one acre ground fire is located in the southern part of the west unit just above the county road. This fire killed the understory, shrubby hardwoods and conifer seedlings and saplings with no damage to larger trees.
2. A ten acre fire that burned approximately 40 years ago, is located in the east unit on the northeast-facing slope above the town of Hawkins Bar. Most of the snags or large trees were cut at the time of the fire. The fire area is currently covered with a dense stand dominated by tan oak, madrone, and canyon live oak sprouts with occasional sapling-size Douglas fir and sugar pine. Small openings in the stand are covered with *Arctostaphylos patula*.
3. Plastic water pipes run from Icebox Creek and Pony Creek to houses in Hawkins Bar.
4. Two old water ditches are located in the lower portion of the east unit. One of the ditches begins in Pony Creek at an elevation of 900 feet and runs in a northwest direction towards the town of Hawkins Bar. The other ditch begins in Icebox Creek at an elevation of 1200 feet and runs in a northwest direction. Both ditches are 5 to 10 feet across at the top and 3 to 5 feet deep. The ditches have not been used for a long time and were probably used during the

gold mining era of 100 years ago.

5. An old water ditch runs through the middle of the west unit. It enters the south boundary at an elevation of 2100 feet and contours through the unit, slowly dropping to an elevation of 2000 feet when it leaves the north boundary of the unit. The ditch is 15 feet across at the top and 6 feet deep. The uphill, cut slope varies from 20 to 50 feet in slope distance, while the downhill side-cast slope varies from 20 to 60 feet, depending upon the steepness of the side slope. The ditch was apparently used in the mining era of 100 years ago. At the present time, the ditch and down slope areas are covered with dense thickets of Douglas fir 1 to 6 inches in diameter. The cut slopes are mostly loose rock or soil. Large, old-growth Douglas fir snags are located in the file slope, apparently killed from having their base covered by the file slope. An old trail runs parallel above or below the ditch with trees and logs cut alongside the trail. Several old camp sites are located along the trail, with assorted metal debris and one intact building.

6. Trinity County Road #436 runs through the middle of the west unit. The date when this road was constructed was not determined; however, three ponderosa pine trees growing in roadside ditches were 76 years old, indicating the road was built before 1910.

7. A series of clearcuts lie above both units of the RNA. These were harvested from 1958 to 1977. All these units currently are fully stocked with planted Douglas fir or ponderosa pine and hardwood sprouts. The older units have been precommercially thinned. Two thinned units lie adjacent to the RNA, Figure 5, Page 10a.

8. A small clearcut, approximately 15 acres, lies inside the north boundary of the east unit. One-half of this area, cut in 1957, is now a 40 foot tall plantation of ponderosa pine. The other half is covered with 40 foot tall tan oak and madrone sprouts. Numerous numbered red stakes indicate this as one of Douglas Roy's Douglas fir-tan oak study areas.

Riparian Zone

A very narrow band of riparian vegetation is found along the six creeks in the RNA. The creeks are deeply incised with numerous active slides into the creek. Common plants along the creeks are white alder (Alnus rhombifolia), big leaf maple (Acer macrophyllum), chain fern (Woodwardia fimbriata), five-finger fern (Adiantum pedatum), and wood sorrel (Oxalis oregana).

Observed Wildlife

Wildlife was not inventoried; however, numerous deer and three bears were encountered in the mixed-evergreen forest. Small mammals such as the western gray squirrel and California ground squirrel appear to be abundant. Numerous

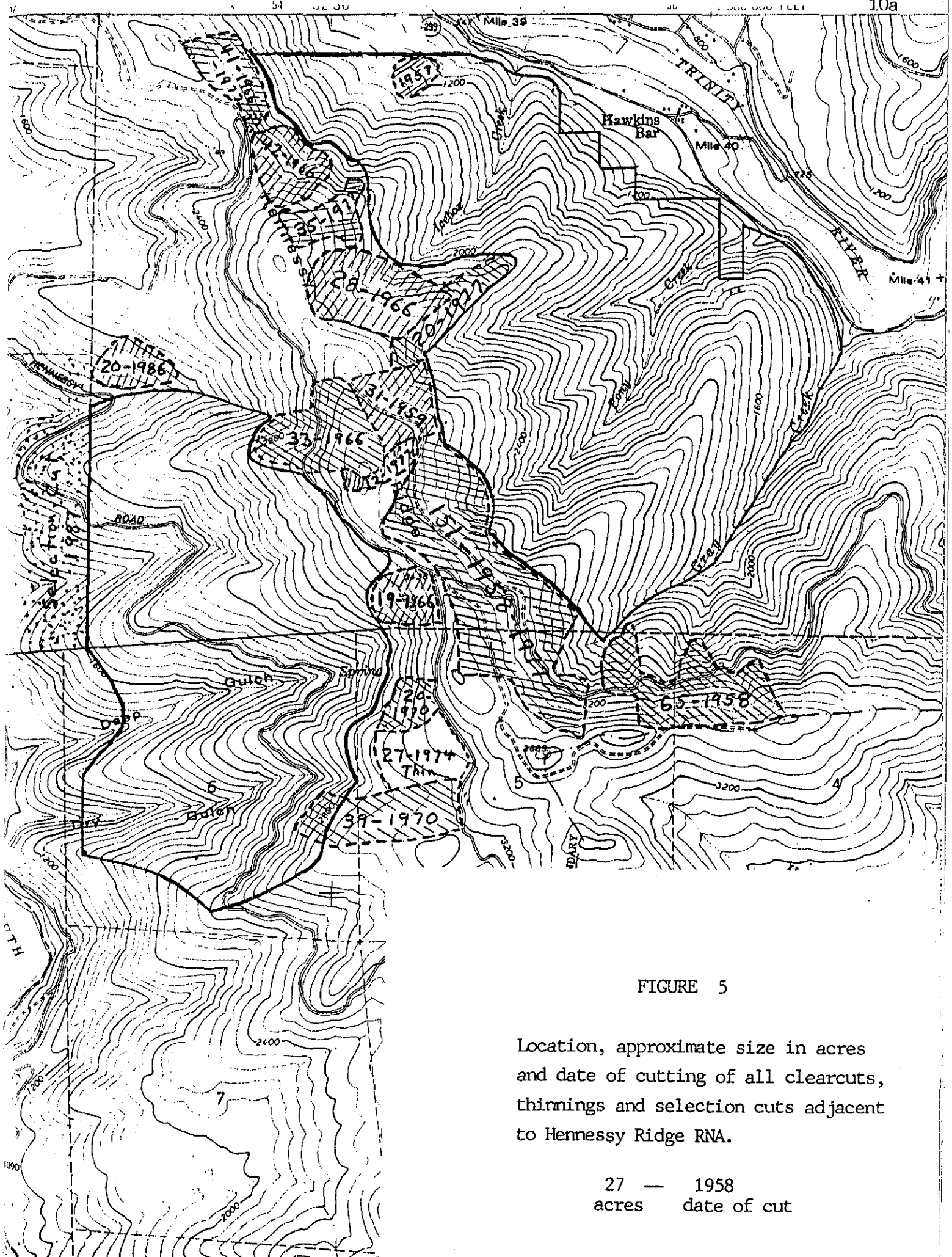


FIGURE 5

Location, approximate size in acres and date of cutting of all clearcuts, thinnings and selection cuts adjacent to Hennessy Ridge RNA.

27 — 1958
acres date of cut

birds were heard, such as the olive-sided flycatcher, red-breasted nuthatch, and robin. The management plan for the Six Rivers National Forest indicates that there are three spotted owl territories in the RNA.

Relationship of the Forest Vegetation in the RNA to Other Vegetation Types in the Western Klamath Region

Geographically, the RNA is approximately located in the middle of Kuchler's Mixed Evergreen Forests (Barbour and Major, 1977). However, the occurrence of canyon live oak as the major reproducing tree in the Douglas fir-canyon live oak type and the second major reproducing tree in the Douglas fir-tan oak-poison oak type, indicates that most of the vegetation is ecologically on dry sites.

In the Siskiyou Mountain Province of southwest Oregon, Atzet and Wheeler, 1984, have separated their Tan Oak Series (which is equivalent to the Mixed Evergreen Forest) into 21 plant associations. The three forest vegetation types identified on the RNA are similar to their three hottest, driest associations of the Tan Oak Series

In the Orleans District of the Six Rivers National Forest, Simpson, 1980, divided the Douglas fir-tan oak forest into four forest types. The three types on this RNA are similar to Simpson's driest forest type.

In the Ukonom District of the Klamath National Forest, Mize, 1973, divided the Mixed Evergreen Forest into four forest vegetation types. The three types on this RNA are similar to Mize's two driest types.

The Douglas fir-hardwood forests with understories of salal (gaultheria shallon), rhododendron (rhododendron macrophyllum), bear grass (xerophyllum tenax), evergreen huckleberry (vaccinium ovatum), sword fern (polystichum munitum), and western yew (taxus brevifolia), all indicators of more mesic sites, are missing from the Hennessy Ridge RNA.

Summary

The vegetation of the proposed Hennessy Ridge Research Natural Area can be divided into two SAF Cover Types--#229 Pacific Douglas-fir-62 acres and #234 Douglas fir-Tan oak-Pacific madrone-1718 acres.

The vegetation can also be divided into three vegetation types--Douglas fir-Tan oak-Oregon grape-118 acres; Douglas fir-Tan oak-Poison oak-1141 acres; and Douglas fir-Canyon live oak-521 acres. The majority of the forest cover is an excellent example of all-aged, all-sized climax forests with an old-growth Douglas fir overstory above a lower canopy of mixed evergreen hardwoods.



Figure 6. Modal stand of old-growth Douglas fir and tanoak with all sizes of both species; Douglas fir — tanoak — poison oak type.



Figure 7. All-aged stand of Douglas fir and tanoak with large madrone and seedlings of tanoak and Douglas fir occurring in clumps; Douglas fir — tanoak — poison oak type.

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Appendix I. Taxa recognized within the proposed Hennessey Ridge Research Area, Nomenclature follows P. Munz. 1959. A California flora. University of California Press, Berkeley. 1581 p.

Aceraceae	Fagaceae
<i>Acer macrophyllum</i>	<i>Castanopsis chrysophylla</i>
Anacardiaceae	<i>Lithocarpus densiflora</i>
<i>Rhus diversiloba</i>	<i>Quercus Kelloggii</i>
Apocynaceae	<i>Quercus chrysolepis</i>
<i>Apocynum andorsaemifolium</i>	Gramineae
Aristolochiaceae	<i>Bromus tectorum</i>
<i>Asarum caudatum</i>	<i>Fescue californica</i>
Aspidiaceae	Iridaceae
<i>Adiantum pedatum</i>	<i>Iris tenuissima</i>
<i>Polystichum imbricans</i>	Leguminosae
<i>Polystichum munitum</i>	<i>Lupinus latifolius</i>
Berberidaceae	Liliaceae
<i>Achlys triphylla</i>	<i>Calochortus coeruleus</i>
<i>Berberis nervosa</i>	<i>Disporum Hookeri</i>
<i>Vancouveria planipetala</i>	<i>Smilacina racemosa</i>
Blechnaceae	Orchidaceae
<i>Woodwardia fimbriata</i>	<i>Corallorhiza maculata</i>
Betulaceae	<i>Goodyera oblongifolia</i>
<i>Alnus rhombifolia</i>	<i>Habenaria elegans</i>
<i>Corylus cornuta</i>	Oxalidaceae
Caprifoliaceae	<i>Oxalis oregana</i>
<i>Lonicera involucrata</i>	Pinaceae
Compositae	<i>Pinus lambertiana</i>
<i>Adenocaulon bicolor</i>	<i>Pinus ponderosa</i>
<i>Hieracium albiflorum</i>	<i>Pseudotsuga Menziesii</i>
Cruciferae	Polemoniaceae
<i>Dentaria californica</i>	<i>Phlox adsurgens</i>
Ericaceae	Portulacaceae
<i>Arbutus menziesii</i>	<i>Montia perfoliata</i>
<i>Arctostaphylos patula</i>	
<i>Vaccinium ovatum</i>	

Primulaceae

Trientalis latifolia

Pteridaceae

Pteridium aquilinum

Pyrolaceae

Chimaphila Menziesii
Chimaphila umbellata
Pterospora andromedea
Pyrola picta

Rosaceae

Rosa gymnocarpa
Rubus leucodermis
Rubus parviflorus
Rubus vitifolius

Rubiaceae

Galium Bolanderi

Saxifragaceae

Mitella trifida
Whipplea modesta

Scrophulariaceae

Pedicularis densiflora

Umbelliferae

Lomatium macrocarpum

Violaceae

Viola glabella
Viola ocellata